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What later consequences, organic, emotional, intellectual, individual, social, tend to follow its use? Which are constant and which confined to particular times and places? What other factors combine to produce them? Which are expected by the persons who use the standards, and which are unexpected? What would follow if the standard were more consistently carried out? To what extent do these results (actual and possible) agree with, conflict with or redirect the more constant impulses, desires and capacities of human nature?

In what ways may the standard and its consequences be modified?

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BOOK REVIEWS

Manhood of Humanity; The Science and Art of Human Engineering. ALFRED KORZYBSKI. New York: E. P. Dutton & Company. 1921. Pp. xiii + 264.

In the preface the author announces that (p. ix) "This book is primarily a study of Man and ultimately embraces all the great qualities and problems of Man."

Count Alfred Korzybski temperamentally seems to be a philosopher and poet who was trained to be a mathematician, engineer and soldier. His natural inclinations have led him to be intensely interested in humanity. In trying to explain human behavior he has used mathematical and engineering terms and figures of speech.

The sub-title of this volume "The Science and Art of Human Engineering" means the directing of the energies and capacities of human beings to the advancement of human weal.

Man has brought much suffering upon himself because he has been ignorant concerning himself, so in order to get a better understanding of humanity the author has proposed a mathematical investigation of the problem. He claims that mathematics must become the basis of the social sciences because of its characteristic precision, sharpness and completeness of definitions. The natural sciences have gone on much faster than the "so-called social sciences" because they have used mathematical methods. Humanity is said to be in its infancy because of so much purposeless sacrifice and wasted energy.

A very novel explanation of the relation of mankind to other organic life is offered. Plants as living organisms appropriate the basic energies of the sun, soil and air. They constitute the lowest order of life. This life order or capacity is represented by the

first dimension or by dimension I. This peculiar quality is called "basic-energy-binding" or "chemistry-binding."

Animals possess the autonomous power to move about in space. This power places them in a higher order. They have "chemistry-binding" power but their peculiar power lies in conquering space. Animals have, therefore, a two-dimensional life or are living in life dimension II characterized as "space-binding."

Man, like the animals, has chemistry- and space-"binding" power, but in addition to this he has the power to profit by experience—the experience of past generations. Every succeeding generation builds upon the accumulated knowledge of the past, while the animal begins its life history at the same point as preceding generations. This quality or power Korzybski has called "time-building." In life it represents dimension III. Such then is the proposed conception of man—one whose glory consists in his peculiar capacity for binding time. The power to "bind time" is a perfectly natural power and the power to act in a time-binding capacity becomes the measure of human progress. Time-binding is the energy that civilizes, it produces wealth, it is the great creative power. Humans have the power to continue where the past generation stopped, profiting by all previous generations. The beaver builds his dams the same without gaining anything from past generations. The progress of man then should become faster from generation to generation. The natural law of this increment can be shown to follow the law of logarithmic increase (pp. 90–92). Thus, if P is the progress made in a given generation, and if R is the ratio, then the progress made in the second generation is PR , and that of the third is PR^2 and that made in a single T th generation will be PR^{T-1} . The expression PR^{T-1} is called an exponential function of time. The immortal offspring of the "marriage of Time and human Toil" increase in a marvelous manner, especially when we consider the vast number of generations that have already contributed or should have contributed to our welfare.

Here we see the need of a technologized social science. Human progress will go on at a rate measured by a rapidly increasing geometric progression if we acquire sense enough to let it do so.

Wealth, according to this teacher, consists of the fruit of man's time-binding capacity—"the living work of the dead."

The closing chapters of the book emphasize the importance of the time-binding activities with a view toward the happiness of all humanity. He finally proposes a Department of Coördination or Coöperation which is to be the nucleus of a civilization developed along mathematical-engineering lines. This development would bring about the greatest true liberty and happiness.

Three appendices are included in the volume with the following titles: (1) Mathematics and Time-Binding, (2) Biology and Time-Binding, (3) Engineering and Time-Binding.

It is evident that the whole discussion rests on the so-called "time-binding" capacity or power of the human being. Evidently what is meant by time-binding is the capacity to profit by experience as the result of associative memory or what has come to be known as intelligence. Although the author probably would not approve of this statement, yet it is evident that mathematical figures of speech have been employed to describe facts that have been considered in every important study of human behavior.

Before the ratio of progress can be worked out, or before a formula for normal human development can be written, it will be necessary to have standards of measurement to see if the relations are as they have been assumed. Psychology (classified on page 25 with philosophy, law and ethics as "private theories" or "verbalisms") as the science of human behavior has already done much in measuring intelligence with its intelligence-quotient and other psychometric methods. The study of human behavior by those who have been especially trained has shown that an *a priori* assumption of mathematical formulæ is a false procedure.

A few, but their tribe decreaseth, of the social investigators still look upon man as supernatural, but most of those in good standing study humanity from an empirical point of view and organize their data quantitatively wherever standards of measurement are available.

The enthusiasm of the author has led him to suggest that mathematics *per se* can solve the problem of humanity. What is needed is the help or service of mathematics in solving problems that are already clearly defined in the minds of real social scientists.

The *Manhood of Humanity* contributes very little to the social sciences, except some interesting mathematical and engineering analogies. The plea for exact and scientific methods in the study of humanity and the warning against mystical or prejudicial attitudes is to be commended.

Humanity is still before us, with us and in us, with its responses to complex and remote stimuli, and with its complicated, delayed responses. Humanity still challenges first the biologist, then the psychologist, and finally the sociologist for an explanation. The Science of Humanity will be the synthesis of all sciences and not the outgrowth of mathematics merely.

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